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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,100	09/19/2006	Shuichiro Saito	03500.109718.	4066
5514 7590 03/08/2010 FITZPATRICK CELLA HARPER & SCINTO 1290 Avenue of the Americas NEW YORK, NY 10104-3800				
EXAMINER ALEJANDRO, RAYMOND				
ART UNIT 1795		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/599,100

**Applicant(s)**

SAITO, SHUICHIRO

**Examiner**

Raymond Alejandro

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 19 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-85/86)  
Paper No(s)/Mail Date 09/19/06, 08/02/07.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application.  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

2. The information disclosure statements (IDS) submitted on 08/02/07 and 09/19/06 were considered by the examiner.

***Drawings***

3. The drawings were received on 09/19/09. These drawings are acceptable.

***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 1, 2, 5 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting: a) essential steps, such omission amounting to a gap between the steps; and/or b) essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted steps/elements are: it is noted that claims 1 and 5 call for *"controlling the fuel introduction valve, the purge valve, and the fuel supply valve through at least one of mechanical operation and electrical operation performed from outside"*, however, there is insufficient technical support/description to clearly and concretely understand how all those elements are interrelated, and/or the degree of interoperability between the recited elements and the mechanical/electrical operation performed from outside. The present claims vaguely describe or do not describe at all how the controlling activity/step is carried out or what enables such activity/step. The same goes for claims 2 and 7 as applicable to the claimed limitations.

#### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

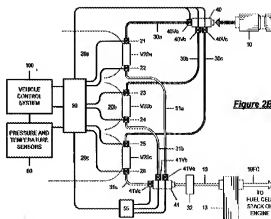
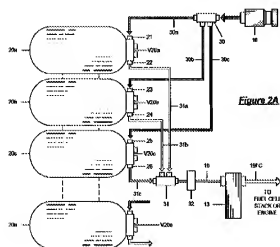
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Mathison et al 2006/0118175.

As to claims 1 and 5:

**FIGURES 2A-B** of Mathison et al illustrate a hydrogen distribution system and refueling system including fuel tanks supplying fuel to a fuel cell stack wherein the fuel system includes a plurality of valves V20a-n on each fuel tank (cartridge) each respectively including controllable inlets and outlets for use when gas is required; and gas flow conduits including valves 21, 23, 25 for controlling fuel supply and/or bypassing (purging) fuel from one point to another (**0021 & 0022**). There is a control mechanism and it is evident that the valves are controlled in response to external factors, and at least mechanically (**0020-0021** and **0024**). *Thus, any one of valves 21, 23 and 25 reads on the purge valve; and since the valves are controllable there is/are a controlling step/activity for controlling the same.*



As to claims 2 and 7:

There is a control mechanism and it is evident that the valves are controlled in response to external factors, and at least mechanically (**0020-0021** and **0024**); they are responsive to an external minimum threshold and/or cut-off pressure (**0018, 0020, 0024-0025**). *Thus, since the valves are controllable there is/are a controlling step/activity for controlling the same.*

As to claims 3-4 and 8-9:

Mathison et al disclose a fuel cell mounted in a vehicle (0002, 0006, 0018); and tanks 20a-n which have the ability of being detached from the system (i.e. detachable).

Thus, the present claims are anticipated.

10. Claims 1-5 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al 2004/0062961.

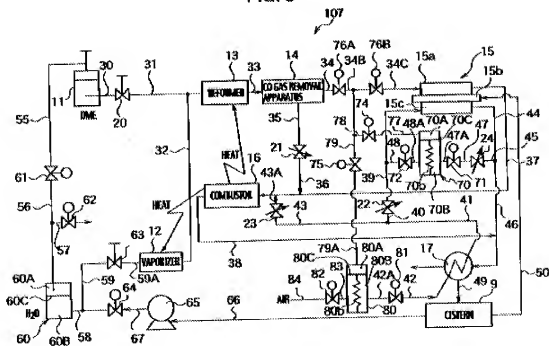
As to claims 1-2, 5 and 7:

**FIGURES 8-13** of Sato et al anticipate the present claims as they all read on applicant's vaguely defined fuel supply device.

By way of example, **FIGURE 8** is discussed herein. There is disclosed a fuel cell system encompassing a fuel tank 11 configured to store a fuel; and a vaporizer configured to vaporize the fuel (*if the fuel is liquid which is then vaporized i.e. made gaseous*) (0008, 0024, 0027, 0028). The fuel supplied to the fuel cell can be natural gas, propane gas, among others (0005). A downstream side of the fuel tank 11 includes a variable conductance **valve 20** which can adjust conductance by adjusting the flow (0025). Fuel passes through pipes 31, 34, 34b-c (the flow passage) to the fuel electrode 15a of the fuel cell unit (0025). In fuel flow lines (pipes) 21, 34, 34b-c, there are also provided variable conductance **valves 76A-B, 75, 74** which are open/closed (controlled) according to sensed parameters such as saturated vapor pressure (0072) so as to supplied hydrogen gas to the fuel cell (0072). *Thus, in this case, FIGURE 8 of Sato et al is deemed to read on applicant's invention as it includes a fuel supply device or fuel distribution system including a plurality of valves providing the same structural arrangement and*

functionality: a) introducing fuel into the pipe 31 (valve 20); purging undesirable gases (valve 75); supplying fuel gas flowing in pipe 34, 34b-c (valve 76A); and supplying fuel to the fuel cell unit (valve 76B). Since the valves are responsive to both the saturated pressure and conductance, they all meet the requirement of being controlled by external mechanical/electrical factors (i.e. pressure and conductance) associated with the fuel cell unit integrated/incorporated/mounted into a fuel cell system including additional system elements or sub-assemblies. Note that in this instance the fuel cell system in which the fuel cell unit is integrated/incorporated into has been taken to represent the external apparatus, and/or any other component of the fuel cell system including the reformer, the gas removal apparatus, the combustor, the vaporizer, the cistern and the likes as applicant's external apparatus is not defined by the claims. This applies equally to the embodiments shown in FIGURES 9-13.

FIG. 8



As to claims 3-4 and 8-9:

Sato et al disclose a fuel cell unit 15 integrated/incorporated/mounted into a fuel cell system/apparatus 107 (FIGURES 8-13, 0068, 0008, 0024); and tank 11 which have the ability of being removed from the system (i.e. detachable) if necessary. Note that the present claims do not define the specific structure of cartridge and the apparatus.

Thus, the present claims are anticipated.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over either: a) Sato et al 2004/0062961 and/or b) Mathison et al 2006/0118175 as applied to claim 5 above, and further in view of Sonoda et al 2004/0232373.

Sato et al and Mathison et al are both applied, argued and incorporated herein for the reasons explained above. However, the preceding references do not expressly disclose the diaphragm/valve to control the pressure of the fuel gas.

Sonoda et al discuss that it is known in the art to employ a valve for a fuel cell which is capable of reducing (controlling) pressure by using a diaphragm disposed in the valve so as to increase the durability of the valve structure or valving system (0009/Abstract).

By compounding the above teachings, it would have been obvious to a person possessing a level of ordinary skill in the art at the time the invention was made to incorporate into/use the diaphragm/valve of Sonoda et al in the fuel cell systems of Sato et al and Mathison et al in order to control fuel gas pressure/fuel supply and to increase the durability of the valve structure or valving system. Thus, Sonoda et al conceptualize that it is beneficial to use a diaphragm for controlling fuel gas pressure.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/  
Primary Examiner, Art Unit 1795